

REMARKS/ARGUMENTS

Concurrently with filing of the RCE in response to the Office Action dated December 10, 2004, claims 1, 2, 3, 6, 7, 8, 9, 10 and 22 are amended, claims 11-20 are canceled, and claims 23-31 are added. Claims 1-10 and 21-31 are now active in this application. No new matter has been added.

The amendments to claims 2, 3, 7, 8 and 9 are made to provide consistency.

The indication that claim 8 would be allowable if rewritten in independent form including all the limitations of the base claim and any intervening claims is acknowledged and appreciated.

REJECTION OF CLAIMS UNDER 35 U.S.C. § 112, SECOND PARAGRAPH

Claim 2 is rejected under 35 U.S.C. § 112, second paragraph, as being indefinite.

With regard to claim 2, the Examiner continues to maintain that the claim recites contradictory information in that the exposure of the area sensor is dependent on the light propagation time, and the exposure of the area sensor is independent of the light propagation time. However, such interpretation is incorrect as the claim properly recites the desired limitation. More specifically, what is recited in claim 2 is that the distance to each photoelectric conversion element is measured based on:

i) the output of the area sensor when the active/inactive timing of the area sensor is controlled such that the amount of exposure of the area sensor is dependent on the light propagation time, and

ii) the output of the area sensor when the active/inactive timing of the area sensor is controlled such that the amount of exposure of the area sensor is independent of the light propagation time.

Such distance measurement occurs when measurement error due to the influence of environmental light is prevented, as described beginning at paragraph [0057]. More specifically, as described in paragraph [0059], in frame (n), intermittent light emission is performed and intermittent exposure is performed with timing identical to the emission timing. Thus, the output of the area sensor when the active/inactive timing of the area sensor is controlled will be such that the amount of exposure of the area sensor is **dependent** on the light propagation time (of the light that is emitted and reflected). However, as described in paragraph [0060], the environmental light component in the exposure light of frame (n) is detected by intermittent exposure **without** light emission in frame (n+1); i.e., based upon just environmental light, not the light that is emitted and reflected. Thus, in frame (n+1), the output of the area sensor when the active/inactive timing of the area sensor is controlled will be such that the amount of exposure of the area sensor is **independent** of the light propagation time, since only environmental light (not emitted light) is used.

The Examiner contends that “within the claim there is no distinction regarding that this is occurring in separate frames or that only environmental light is used in the second frame” and “without these distinguishing features the claim continues to be contradictory...”

In this regard, the Examiner should be aware that case law precedent has established that an analysis under 35 U.S.C. § 112 begins with a determination of whether the claims do, in fact, set out and circumscribe a particular area with a reasonable degree of precision and particularity. Claim language is viewed not in a vacuum, but in light of the teachings of the prior art **and of the application disclosure as it would be interpreted by one possessing the ordinary level of skill in the art**. *In re Johnson*, 558 F.2d 1008, 194 USPQ 187 (CCPA 1977); *In re Moore*, 439 F.2d 1232, 169 USPQ 236 (CCPA 1971).

A decision on whether a claim is invalid under 35 U.S.C. § 112, second paragraph, requires a determination of whether those skilled in the art would understand what is claimed when the claim is read in light of the specification, *Seattle Box Co. v Industrial Crating & Packing*, 731 F.2d 381, 385, 221 USPQ 568, 574 (Fed. Cir. 1984).

In determining definiteness, *no claim may be read apart from and independent from the disclosure* on which it is based. *In re Cohn*, 169 USPQ 95, 98 (CCPA 1971); *In re Kroekel*, 183 USPQ 610, 612 (CCPA 1974):

... claims are not to be considered in a vacuum, "but always in light of the teachings of the prior art and the particular application disclosure as it would be viewed by one possessing the ordinary level of skill in the pertinent art." When considered in light of the prior art and the specification, claims otherwise indefinite may be found reasonably definite.

The Examiner's problem concerning contradiction results from the fact that the Examiner is reading the claim 2 in a vacuum and not in light of the specification. More specifically, if the disclosure supports the claim 1, even though claim 2 does not recite more specific details, then the claim is definite. In this regard, it should be noted also that the disclosure need not recite the claim language in *haec verba*. *In re Smith*, 481 F.2d 910, 178 USPQ 620 (CCPA 1973).

It is submitted that when claim 2 is read in light of the specification, as explained above, an artisan would readily understand the metes and bounds of the invention. The fact that a claim is broad does not justify a rejection on the ground that the claim is indefinite or incomplete (see § 706.03(d) of the M.P.E.P.). The Examiner's criticism of claim 2 is clearly directed to breadth of scope and not indefiniteness. As such, the rejection improperly attempts to limit the scope of the claims by requiring additional limitations under the guise that such limitations are necessary to make the claims definite (non-contradictory).

However, as herein above explained, claim 2 recites the invention with the degree of precision and particularity required by the statute. Therefore, it is respectfully urged that the rejection of claim 2, as being indefinite, be withdrawn.

REJECTION OF CLAIMS UNDER 35 U.S.C. § 103

I. Claims 1, 3-5, 11-20 and 22 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Yahav et al. (USPN 6,091,905).

Claim 10 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Netzer (USPN 5,930,383) in view of Uomori et al. (USPN 6,587,183).

Claims 6, 9 and 21 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Yahav et al. in view of Netzer.

Claim 7 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Yahav et al. in view of Netzer and further in view of Tanaka (USPN 6,252,655).

II. To expedite prosecution, claims 11-20 are cancelled, new claims 23-31 are submitted, claim 10 amended to depend from new independent claim 23, and independent claims 1, 6 and 22 are amended.

Independent claim 1 is amended to recite, *inter alia*:

...controlling the active/inactive timing of the area sensor such that an electric charge photoelectrically converted by the plurality of photoelectric conversion elements is accumulated with a timing synchronously with the light projection; and

measuring the distance to each photoelectric conversion element based on the output of the area sensor,

wherein changing said active/inactive states of the area sensor is performed a plurality of times in one accumulating period of the area sensor.

Independent claim 6 is amended to recite, *inter alia*:

...a controller for controlling ON/OFF states of the plurality of photoelectric conversion elements with a timing synchronized with the pulse light projection to obtain at least two frame images, the ON/OFF states are activated a plurality of times in one accumulating period of the area sensor; and

a processor for eliminating the fluctuating component of the received light intensity due to distance or reflectivity of the object from the amount of exposure obtained based on the control of the ON/OFF states by use of the at least two frame images.

Independent claim 22 is amended to recite, *inter alia*:

...controlling the projector to emit light a plurality of times periodically during one ~~frame~~ accumulating period of the area sensor and periodic ON/OFF states of the plurality of photoelectric conversion elements a plurality of times during one accumulating period synchronously with the periodical emitting of the projector; and

measuring the distance to each photoelectric conversion element based on the output of the area sensor.

New independent claim 23 is recites, *inter alia*:

...controlling the projector to emit light and ON/OFF states of the plurality of photoelectric conversion elements synchronously with the emitting of the projector; and

measuring the distance to each photoelectric conversion element based on the output of the area sensor, wherein

said area sensor includes two gates in said each photoelectric conversion element for controlling an electric charge photoelectrically converted by said each photoelectric conversion element, the ON/OFF states of said two gates are activated alternately.

New independent claim 26 is recites, *inter alia*:

...a controller for controlling ON/OFF states of the plurality of photoelectric conversion elements with a timing synchronized with the light projection; and

a processor for eliminating the fluctuating component of the received light intensity due to distance or reflectivity of the object from the amount of exposure obtained based on the controlling of the ON/OFF states of the plurality of photoelectric conversion elements, wherein

said area sensor including two gates in each photoelectric conversion element for controlling an electric charge photoelectrically converted by said each photoelectric conversion element, the ON/OFF states of said two gates activate alternately.

Finally, new independent claim 29 is recites, *inter alia*:

a plurality of pixels for receiving incident light, said pixel including:
photoelectric conversion elements for converting the incident light to electric charge photoelectrically;
a first gate for controlling the electric charge to accumulate for output; and
a second gate for controlling the electric charge to discharge, wherein ON/OFF states of said first and second gate are controlled alternately.

The features recited in amended independent claims 1, 6 and 22, as well as new independent claims 23, 26 and 29, are not disclosed or suggested in Yahav et al. and Netzer, considered alone or in combination. Consequently, the allowance of claims 1-10, 21 and 22, as amended, as well as new claims 23-31, is respectfully solicited.

CONCLUSION

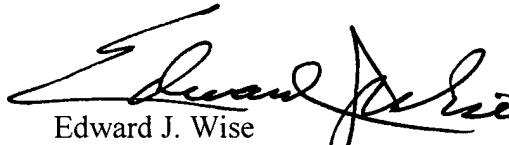
Accordingly, it is urged that the application, as now amended, is in condition for allowance, an indication of which is respectfully solicited. If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, Examiner is requested to call Applicants' attorney at the telephone number shown below.

09/855,506

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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